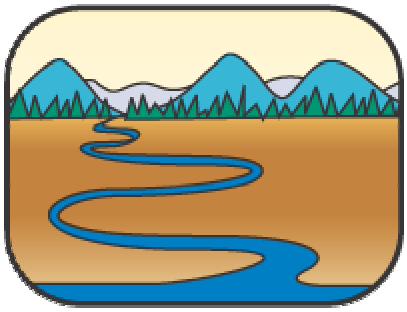

Lessons from the Bay

Glossary of Wetland Terms

– A –

abiotic factors: physical environmental factors (e.g., water, temperature, soil, light) that influence the composition and growth of an ecosystem.

adaptation: a specific structure or behavior that helps an organism survive and reproduce in a particular environment; the process that enables organisms to become better suited to their environment.

aerobic: any process that requires oxygen.

agriculture: the science or process of farming or cultivating the soil for the production of plants and animals that will be useful to humans in some way.

alderfly: an aquatic macroinvertebrate of the order *Megaloptera*. Alderfly larvae have projections or filaments but no wings. They are somewhat sensitive to pollution.

algae: varied aquatic protists, or phytoplankton, that lack vascular tissue, and are usually photosynthetic.

algal bloom: an explosive population increase in algae that occurs when large amounts of phosphates and/or nitrates enter a body of water in the presence of warm temperatures.

anadromous fish: fish that migrate up rivers from the sea to breed in fresh water.

anaerobic: lacking or not needing oxygen.

annelids: aquatic macroinvertebrates of the phylum *Annelida*; segmented worms with bilateral symmetry, closed circulatory systems, and complete digestive systems; includes leeches.

apparent color: the color given to water by dissolved substances and suspended matter (e.g., metallic ions, plankton, algae, industrial pollution, and plant pigments). Apparent color provides useful information about the water's source and content.

aquaculture: the production of fish, shellfish, invertebrates, and plants in marine, brackish, or freshwater environment.

aquatic: living or growing in or on the water.

aquatic worms: aquatic macroinvertebrates without legs, including flatworms (planaria), roundworms (nematodes), and freshwater earthworms (oligochaetes). They can tolerate pollution.

arrow arum: *Peltondra virginica* or duck corn. Arrow arum is an emergent vegetation found in freshwater wetlands; its seeds develop in spike-shaped pods.

assessment: an evaluation.

atmosphere: the gaseous mass or envelope surrounding the earth.

autumn-flowering clematis: *Clematis maximowiscziana*, exotic invasive plant that grows in swamp forests (intermittently flooded lowland forests).

– B –

bacteria: (singular bacterium) phytoplankton; single-celled prokaryotic organisms.

bald eagle: *Haliaeetus leucocephalus,* a North American eagle, having a dark body and a white head and tail. The white head develops once the eagle is mature at age 5.

banded killifish: *Fundulus diaphanous*, a native fish found in major river drainage areas.

bank erosion: the process in which individual soil particles of a stream bank are carried away as the stream channel moves. The amount of erosion is affected by vegetation, soil composition of the bank, flow of water in the stream, and runoff from the land.

bank slumping: an indication of the degree of bank erosion. A healthy habitat has gentle bank slopes and no evidence that the stream is undercutting the bank.

bank vegetation: trees, shrubs, grasses, and other vegetation growing on the stream bank.

bay: a body of water partly enclosed by land, but having a wide outlet to the sea.

bed load: sediment consisting of coarse material such as gravel, stones, and boulders that move along the bottom of a stream channel.

beefsteak plant: *Perilla frutescens*, an exotic invasive plant, originally from Asia, that grows in a clearing (meadow or field).

beetle: an aquatic macroinvertebrate with larvae that have lateral filaments off their sides, a hook at the end of their body, and no wings. Adults have outer wings and are often black in color. The larvae are somewhat sensitive to pollution.

bend: a change in the direction of a stream channel and the flow of water in the stream.

benthic plants: aquatic plants that grow attached to or rooted to the bottom of the body of water and withdraw nutrients from the sediment.

benthos: organisms that live on or in the bottom sediments of a water body.

biochemical oxygen demand (BOD): a measure of the quantity of oxygen used by organisms to decompose organic matter, usually measured at the end of a five-day period.

biodiversity: refers to variety of organisms, their genetic information and the biological communties where they live.

blackfly: an aquatic macroinvertebrate of the order *Diptera*, a true fly. Dumbbell-shaped, soft larvae attach themselves to the substrate and prefer soft sediment; they are pollution tolerant.

broad-leaved plantain: *Plantago major*; an exotic invasive plant, originally from Europe, that grows in a clearing (meadow or field).

brine: a strong salt solution such as salt water.

burrow: a hole or tunnel dug in the ground by an animal as a place to live or hide. —*vi.* to dig a hole or tunnel

bush honeysuckle: *Lonicera x spp*.; an exotic invasive plant, originally from Eurasia, that grows in swamp forest (intermittently flooded lowland forest).

– *C* –

caddis fly: aquatic macroinvertebrate of the order *Trichoptera*. Larvae have three pairs of legs, hooks on the end of their abdomen, and no wings. Larvae are sensitive to pollution.

canopy: overhanging tree cover.

carnivore: a meat eater; a consumer that eats other consumers.

cattails: *Typha spp*.; emergent vegetation of freshwater marshes and wetlands; tall perennial plants.

chlorinated: water treated with chlorine as a disinfectant.

clam: an aquatic macroinvertebrate of the phylum *Mollusca*, the clam is enclosed within two shells and feeds by filtering stream water through its shells; it is somewhat sensitive to pollution.

clarity: clearness.

clay: suspended sediment or bed material with a particle size of 0.00024-0.004 mm in diameter, smaller than a grain of sand.

cloud cover: the amount of sky covered by clouds, usually characterized as partly cloudy (10%– 50% of sky covered by clouds) or cloudy (50%– 90% of sky covered by clouds).

coagulation*:* the process in which chemicals react with suspended particles in a liquid to form a sticky precipitate.

common reed: *Phragmites australis*; an exotic invasive plant that grows in swamp forest (intermittently flooded lowland forest).

community: two or more populations of different species living and interacting in the same area.

competitors: individuals or species that each require the same limited resource to survive.

compost: a mixture of decaying organic matter, such as leaves and manure, that can be used as a plant fertilizer.

consumer: an organism that eats other organisms because it is unable to make its own food; a heterotroph.

contaminant: a substance that when mixed with another substance makes it impure.

control: a condition in a scientific experiment that remains the same.

coontail: a submerged aquatic vegetation (SAV), *Ceratophyflum demersum*; abundant in lakes, streams, marshes, and ditches in a depth of up to 18 feet; tolerant of nutrient-rich water and fluctuating water levels. It has leaves in whorls of 5-12 and can form thick masses.

crab: an aquatic macroinvertebrate of the phylum *Arthropoda*, class *Crustacea*. The crab is a bottom-dwelling predator.

crane fly: an aquatic macroinvertebrate of the order *Diptera,* a true fly. The larvae are large and fleshy with short tentacles at one end. Crane flies are somewhat sensitive to pollution.

crayfish: an aquatic macroinvertebrate of the phylum *Arthropoda,* class *Crustacea*. Crayfish have more than three pairs of legs and two pairs of antennae, with eyes on stalks and a hard covering on the back; somewhat sensitive to pollution.

croplands: land used for agriculture.

crustacean: an aquatic macroinvertebrate of the phylum *Arthropoda,* class *Crustacea*; includes crayfish and crabs. They have more than three pairs of legs and two pairs of antennae.

cultivate: to prepare land for crops by plowing and fertilizing.

cultural eutrophication: human-caused eutrophication; usually a very rapid process that can result in the death of an ecosystem.

– D –

damselfly: an aquatic macroinvertebrate of suborder *zygoptera*. The larvae have three pairs of legs, one pair of antennae, and wing pads with feathery gills protruding from the abdomen. Larvae are somewhat sensitive to pollution.

daphnia: genus *Daphnia*; small freshwater crustaceans.

data: recorded observations and information.

data analysis: an evaluation of collected observations and information.

decomposers: a group of organisms, mainly fungi and bacteria, that digest organic material and release nutrients into the environment.

decomposition: the process of decay; the breaking down of organic matter into its component parts.

degrade: to reduce; to decompose by stages; to wear away by erosion.

degrees of latitude/longitude: angular units defined by circular lines around the Earth; used to measure distance north or south of the equator (latitude) and east or west of the prime meridian (longitude).

density: the mass of a substance per unit volume; the number of inhabitants per unit in a geographical region; the degree to which anything is filled or occupied; the degree of thickness.

dependent variable: a responding variable; a factor or condition that might change as a result of a change in a manipulated independent variable.

diatoms: phytoplankton of the class *Bacillariophyceae*. Diatoms are minute, unicellular or colonial algae having siliceous cell walls consisting of two overlapping, symmetrical parts.

dinoflagellates: a type of protist that includes photosynthetic forms in which two flagella project through armor-like plates. Abundant in oceans, these sometime reproduce rapidly, causing "red tides."

dissolved load: sediment made up of organic and inorganic material carried in solution by moving water.

dissolved oxygen (DO): the amount of oxygen dissolved in water; varies with water temperature and pressure; measured in milligrams of oxygen per liter of water, parts per million, or percent saturation.

distillation: a process used to clean water. Steam from a sample of boiling water is almost completely free of impurities. In distillation, the steam is collected and allowed to condense back into water.

diversity: variety; difference.

diving beetle: predatory aquatic beetles from the family *Dytiscidae*.

DNA: deoxyribonucleic acid; nucleic acid macromolecule that stores and transmits the genetic information of all living cells from one generation to the next.

dragonfly: an aquatic macroinvertebrate of the suborder *Anisoptera*. The larvae have three pairs of legs, one pair of antennae, and wing pads. Larvae are somewhat sensitive to pollution.

drainage basin: a watershed; the land area where precipitation runs into streams, rivers, lakes, and reservoirs. It can be identified by tracing a line along the highest elevations, often a ridge, between two areas on a map.

– E –

E. coli*: Escherichia coli* of the family *Enterobacteriaceae;* fecal coliform bacteria. *E. coli* is present in the lower intestine of humans and warm-blooded animals, but rarely present in unpolluted waters.

ecology: the study of the interrelationships of organisms with each other and their nonliving environment.

ecosystem: all organisms and their nonliving environment within a defined area.

eel grass: submerged aquatic vegetation (SAV) of the genus *Zostera*; found in coastal areas; has narrow, grass-like leaves and grows in dense masses.

emergent vegetation: benthic plants that grow partly in water and partly emerging from water (e.g., cattails, arrow arum, pond lily, phragmites).

encroach: to intrude gradually upon the area of another; to advance beyond proper limits.

endangered species: organisms so rare or few in number that they are threatened with extinction.

English ivy: *Hedera helix*; an exotic invasive plant, originally from Europe, that grows at the wood's edge.

English plantain: *Plantago lanceoalata*; an exotic invasive plant, originally from Europe, that grows in a clearing (meadow or field).

environs: surroundings; environment.

eradicate: to remove all traces of; to erase.

erosion: process by which earth material is transported from one area to another by an agent such as water or wind.

estuary: a place where fresh and salt water mix (e.g., a bay, salt marsh); a place where a river enters an ocean.

eutrophication: a natural process in which there is an enrichment of water by nutrients, causing accelerated growth of algae and higher forms of plant life.

evolution: any change in the overall genetic composition of a population of organisms from one generation to the next.

exoskeleton: a hard, external body covering that provides support for tissues and organs and protects the organism from predators. Arthropods have exoskeletons.

exotic species: non-native plants and animals living in the wild in areas outside their native boundaries.

extinct: a species with no living members. All members of a species are dead; the end of a species.

– F –

fecal coliform: *Escherichia coli, E. Coli*; of the family *Enterobacteriaceae*; bacteria naturally abundant in the lower intestine of humans and other warm-blooded animals, but rare in unpolluted waters.

fertilizer: natural or synthetic materials used to increase the fertility of soil. A significant ingredient in urban and agricultural runoff that stimulates the growth of algae and other aquatic plants.

field garlic: *Allium vineale*; an exotic invasive plant that grows in a clearing (meadow or field).

filtration: the process of removing suspended particles from untreated water by passing the water through porous substances; part of the process to convert raw water into higher quality water.

fishfly: an aquatic macroinvertebrate of the order *Megaloptera*; larvae have many filamentous appendages on each side of the abdomen, two hooked tails, six jointed legs, and large pinchers for mouth parts; somewhat sensitive to pollution.

flocculation: part of a water-cleaning process in which small sticky particles clump together to make larger and heavier particles (floc). The larger particles eventually sink to the bottom of a containment area and can then be removed.

fluoridation: part of the water treatment process in which hydrofluorosilicic acid is added to untreated water. The presence of fluoride in water reduces tooth decay.

food chain: a series of steps from producers to consumers to decomposers; one possible way food and energy are transferred through an ecosystem.

food web: all feeding relationships of organisms in an ecosystem.

forage: the act of searching for food or provisions; to wander in search of food or provisions.

forest: a dense growth of trees, together with other plants, covering a large area.

fossil: The preserved remains or evidence of ancient organisms. Impressions of body forms or markings made by organisms may be preserved in rock, petrified bones, or wood.

fossil fuel: substances derived from the decomposition of prehistoric plants and animals that can be burned to produce energy (i.e., coal, oil, and natural gas).

fresh water: water that is not saline or brackish. Water that is low in salts, containing less than 1,000 mg/L of dissolved solids.

fungus (plural, *fungi*): a type of phytoplankton; made of eukaryotic cells with cell walls; fungi obtain food by absorbing organic substances.

– *G* –

garbage: waste material that is wet, such as recent yard and food waste.

garbology: the study of garbage.

garlic mustard: *Alliaria petiolata*; an exotic invasive plant, originally from Europe, that grows at the wood's edge.

gilled snail: an aquatic macroinvertebrate of the class *gastropoda*; enclosed within one shell; sensitive to pollution.

global positioning system (GPS): a satellite-based radio-navigation system developed and operated by the U.S. Department of Defense. GPS permits land-, sea-, and air-based users to determine their 3-dimensional position, velocity, and time, 24 hours a day, in all weather conditions, anywhere in the world.

grassland: a biome in which grasses are the major species (e.g., steppe, prairie, savanna).

gravel: suspended sediment or bed material with a particle-size of 2.0-64.0 mm in diameter.

great blue heron: *Ardea herodias*; a long-legged bird with a sharp beak used to catch aquatic animals. It has a bluish gray body, reddish brown neck, and often white splotches near its eyes; lives near and in lakes, ponds, and marshes.

ground water: water that flows or seeps downward and saturates soil or rock, supplying springs and wells; also water stored underground in rock crevices and in the pores of geologic materials that make up the Earth's crust.

– *H* –

habitat: the type of environment in which an organism usually lives.

harvesting: the process of gathering a crop.

hellgrammite: an aquatic macroinvertebrate of the order *Megaloptera*; also called dobsonfly. Larvae have three pairs of segmented legs and four terminal hooks on their abdomen; sensitive to pollution.

herbicide: a toxic substance used to destroy plants.

herbivore: an organism that eats only plants; a primary consumer.

humus: decayed remains of organisms. The addition of humus to soil enriches it with organic material and increases the capacity of the soil to hold air and water.

hydrilla: submerged aquatic vegetation (SAV), *Hydrilla verticillata*; non-native invasive plant with branched stems up to 25 feet long; found in all types of water bodies.

hypothesis: a possible, testable explanation, based on an educated guess and previous observations; a proposed solution to a scientific problem.

– I –

immiscible: incapable of blending or mixing. In part of the process of converting untreated water into drinkable water, the water must be held undisturbed for a period of time to allow the immiscible pollutants to separate from the water.

impervious: not capable of being passed through, damaged, or disturbed. (Water is not able to flow through impervious surfaces, such as asphalt roads and concrete sidewalks.)

incinerator: an apparatus used for burning waste at very high temperatures; a furnace.

independent variable: a manipulated variable; a factor or condition that changes naturally or is intentionally manipulated by the investigator to observe the effect.

indicator: any of a variety of substances used to demonstrate the presence, absence, or concentration of a substance.

industrial: related to the commercial production of goods.

inorganic: compounds derived from non-living things that do not contain carbon.

interdependent: organisms that need each other for survival.

invasive species: organisms that spread, encroach upon, and take over the habitat of native species.

invertebrates: animals that do not have a backbone.

– J –

Jackson turbidity unit (JTU): a unit of measure for turbidity (derived from the original "Jackson Tube"). Turbidity is measured by determining the amount of light that is reflected off particles suspended in water.

Japanese honeysuckle: *Lonicera japonica*; an exotic invasive plant, originally from East Asia, that grows at the wood's edge.

– K –

kudzu: *Pueraria thunbergiana*; an exotic invasive bean vine, originally from China and Japan.

– L –

lake: a large inland body of salt or fresh water.

landfill: a huge pit in the ground that is lined with clay or plastic and filled with garbage. Layers of garbage are spread out and alternated with layers of dirt or plastic.

larva (plural, *larvae*): the immature stage of an organism that usually looks different from the adult form of the organism.

latitude: the angular distance on Earth's surface north or south of the equator, expressed in degrees, minutes, and seconds.

leeches: an aquatic macroinvertebrate of the phylum *Annelida,* class *Hirudinea*; aquatic worms that do not have legs; tolerant of pollution.

leopard frog: *Rana pipiens*. Found all over the United States; lives in scrub, desert, ponds, rivers, and meadows, but prefers swamps in the summer; brown or green with small spots on the side; usually 2-3.5 inches long.

longitude: the angular distance on Earth's surface east or west of the prime meridian, expressed in degrees, minutes, and seconds.

– M –

macroinvertebrates: organisms without a backbone that are large enough to be seen with the unaided eye.

marsh: an area of low-lying wetland; a swamp; a bog.

mayfly: an aquatic macroinvertebrate of the order *Ephemeroptera*; larvae have three pairs of legs, one pair of antennae, three long tail filaments, and feathery or plate-like gills on their abdomen; sensitive to pollution.

microbe: a microorganism; a minute life form.

microorganism: an organism of microscopic size; especially a bacterium or protozoan.

midge: an aquatic macroinvertebrate of the order *Diptera*; a true fly; larvae are very small, often C-shaped and have a spastic, squirming movement; they attach themselves to debris with tiny legs; larvae are tolerant of pollution.

minute of latitude/longitude: a unit of measurement equal to 1/60 of a degree. One minute equals 60 seconds latitude or longitude.

moisture content: amount of wetness.

mollusk: a marine macroinvertebrate of the phylum *Mollusca*; a shellfish.

moratorium: a delay of action; a suspension.

musk thistle: *Carduus nutans*; an exotic invasive plant, originally from Asia and Europe, that grows in a clearing (meadow or field).

multiflora rose: *Rosa multiflora*; an exotic invasive plant, originally from Japan, Korea, or Eastern China, that grows at the wood's edge and in swamp forest (intermittently flooded lowland forest).

mullet: an edible fish of the family *Mugilidae* found worldwide in tropical and temperate coastal waters and some freshwater streams.

mussels: marine bivalve mollusks.

– N –

natural selection: the resulting survival and reproduction of organisms due to the varying effects of environmental forces on genetically different members of a population; results in the preservation of favorable adaptations.

nematodes: extremely diverse aquatic macroinvertebrates; roundworms; long, thin aquatic worms that writhe like snakes.

nephelometric turbidity unit (NTU): a unit of measure for turbidity (as measured by a nephelometer). Turbidity is measured by determining the amount of light that is reflected off particles in the water.

niche: the unique role of an organism in an ecosystem.

nitrate: one form of nitrogen that plants use as a nutrient. One ion of nitrate is composed of one nitrogen atom and three oxygen atoms.

nitrogen: a non-metallic element designated with the chemical symbol N. All organisms need nitrogen to build protein.

non-native species: a species that has been imported or brought into an area.

non-point source pollution: pollution discharged over a wide land area, not from one specific location. Diffuse water pollution caused by sediment, nutrients, and organic or inorganic toxic substances carried to lakes and streams by surface runoff.

northern water snake: a non-venomous snake of the genus *Natrix* that frequents streams and ponds.

noxious weed: a plant that is undesirable because it is harmful to other plants.

nutrient: a substance that is acquired from the environment and is needed for the survival, growth, and development of an organism.

– O –

observation: the use of the five senses to note a phenomenon.

odor: the smell or scent of something. Chemicals from waste discharges, microbial activity, or natural sources may cause a body of water to have an odor.

omnivore: an organism that eats both plants and animals.

organic matter: plant and animal residues; substances made by living organisms; contains carbon.

organism: an individual living thing.

oriental bittersweet: *Celastrus orbiculatus*; an exotic invasive plant, originally from Eastern Asia, that grows at the wood's edge and in swamp forest (intermittently flooded lowland forest).

orthophosphate: chemistry-based term that refers to an organic phosphate where the phosphate is attached on the ortho position in a benzene ring.

osprey: *Pandion haliaetus*; a fish-eating hawk with plumage that is dark on the back and light below.

oxidation: process by which an atom becomes more positively charged. Reactions with oxygen are the most common (e.g., formation of rust on iron).

oxygen demand: the amount of molecular oxygen required for biological and chemical processes in water.

oxygen saturation: the maximum amount of oxygen that will dissolve in water at a given temperature. Oxygen saturation is determined by pairing the temperature of the water with the dissolved oxygen value, after first correcting the dissolved oxygen measurement for the effects of atmospheric pressure.

oyster: bivalve mollusks of the genus *Ostrea.* Oysters are chiefly found in shallow marine waters and have irregularly shaped shells.

– P –

parameter: a characteristic, or descriptive feature, such as odor, color, or temperature.

parasite: an organism that lives in or on another organism, causing it harm.

pathogen: a disease-producing agent, usually applied to a living organism. Generally, any virus, bacterium, or fungus that causes disease.

penetrate: to enter or force a way into; to spread or flow throughout an area.

periwinkle: trailing evergreen plants of the genus *Vinca*.

permeability: the ability of a material to allow a liquid to pass through it. Permeable materials, such as gravel and sand, allow water to move quickly through them.

pesticide: a chemical used to kill pests, especially insects and rodents.

pH: a scale from 0 to 14 used to measure relative acidity or alkalinity. A pH measurement less than 7 is acidic, 7 is neutral, and greater than 7 is basic or alkaline.

phosphate: a form of phosphorous; an essential nutrient for plants and animals; usually present in natural waters as phosphate. Phosphate is an ion composed of one phosphorus atom and four oxygen atoms.

phosphorous: a non-metallic element designated with the chemical symbol P; an essential nutrient for plants and animals; usually present in natural waters as phosphate.

photosynthesis: a series of chemical reactions in producers, usually plants, in which light energy is used to make chemical energy in the form of food.

phytoplankton: microscopic photosynthetic protists (e.g., bacteria and algae). They form the basis of freshwater and marine food webs and are the main producers in the open ocean.

plankton: microscopic organisms that drift freely with water currents; phytoplankton are producers (plants); zooplankton are animals.

pod: a seed vessel or fruit of a plant.

pollination: sexual reproduction in plants in which pollen is transferred from anther to stigma of either the same plant or another plant.

pollution: contamination of air, water, or soil by toxic organic or inorganic substances (e.g., industrial or agricultural waste by-products, engine exhausts, factory emissions, or human waste). Pollution can come from a single source (point source) or be discharged over a wide area from many sources (non-point source).

point source pollution: pollution coming from a single point (e.g., sewage-outflow pipe).

pond lily: water lily of the genus *Nymphaea*; an emergent vegetation with floating leaves.

pond snails: aquatic macroinvertebrate; phylum *Mollusca,* order *Gastropoda*; organism is enclosed within one shell; tolerant of pollution.

pool: a deeper area of water in a stream; usually quiet and often with no visible flow.

population: a group of organisms of the same species living in the same area.

porcelain-berry: *Ampelopsis brevipedunculata*; an exotic invasive plant that grows in swamp forest (intermittently flooded lowland forest).

porosity: the percent of space or pores between sediment particles; it indicates the amount of water the sediment can hold.

pouch snail: aquatic macroinvertebrate; phylum *Mollusca*, order *Gastropoda*; organism is enclosed within one shell; tolerant of pollution.

precipitation: condensed water vapor that falls to or forms on the surface as rain, snow, hail, sleet, dew, and frost.

predator: an organism that kills and eats other organisms.

prey: a creature hunted or caught for food.

primary consumer: an organism that feeds on producers; an herbivore.

primary productivity: the amount of energy trapped by photosynthesis. This quantity determines how much life a region will support.

pristine environment: an environment remaining in a pure or uncorrupted state.

producer: an organism that makes its own food; a photosynthetic organism; an autotroph.

propagation: increased or spread by natural reproduction.

protist: a unicellular organism of the kingdom *Proctista* (e.g., protozoans, slime molds, certain algae). Protists formerly belonged to a kingdom called *Protista.*

purple dead nettle: *Lamium purpureum*; an exotic invasive plant that grows in a clearing (meadow or field).

– Q –

Q factor: a rating scale that translates water quality test results to a number from 0-100.

– R –

raceme: a particular type of arrangement of flowers on a main axis or stem. Flowers with a raceme arrangement have single stalks arranged along a common axis (e.g., lily-of-the-valley).

rampant: widespread; extending unchecked; unrestrained.

random: having no particular pattern or order.

rapids: an extremely fast-moving part of a river, caused by a steep descent in the riverbed.

recycling: the process by which wastes can be reused or converted into other materials or products. The process by which materials and substances are reused.

refuse: waste products, including both wet and dry materials.

residential: land used for human dwellings and activities.

respiration: the process that involves the transfer of oxygen to cells and the breakdown of food to release energy. In complex animals, respiration involves the intake of oxygen and the discharge of carbon dioxide.

restoration: the act of putting something back to a prior condition.

riffle: a rapid, turbulent flow of water over a shallow area in a stream. Riffles add oxygen to the water as water is churned and provide habitat for many invertebrates.

riffle beetle: an aquatic macroinvertebrate of the order *Coleptera*; larvae are specially adapted to cling to smooth rocks in fast-flowing water (riffles); sensitive to pollution.

riparian area: the land adjacent to streams, rivers, or other bodies of water that directly affects, or is affected by, the water; a unique habitat that exists in mutual balance with the river channel.

river: a large natural stream of water emptying into an ocean, lake, or other body of water, and usually fed along its course by converging tributaries.

river basin: the land area drained by a river and its tributaries; a watershed.

rubbish: refuse; trash; waste.

runoff: that part of the precipitation, snow melt, or irrigation water that appears in uncontrolled surface streams, rivers, drains, or sewers. Runoff may be classified according to speed of appearance after rainfall or melting snow (direct or base runoff) or according to source (surface runoff, storm interflow, or ground-water runoff).

– *S* –

sample: a portion, piece, or segment regarded as representative of a whole.

sand: suspended sediment or bed material with a particle-size of 0.062-2.0 mm in diameter.

scrubland: a growth or tract of stunted vegetation.

scud: an aquatic macroinvertebrate; an amphipod of the phylum *Arthropoda*, class *Crustacea*; have many appendages and two pairs of antennae; are very fast swimmers; look like shrimp; somewhat sensitive to pollution.

secondary consumer: an organism that feeds on primary consumers; a carnivore.

second of latitude (or longitude): a unit of measure equal to 1/60 of a minute latitude or longitude.

sediment: loose materials such as rock fragments and mineral grains that have been transported by wind, water, or glaciers.

sediment load: total sediment in a sample of water. There are three categories of sediment: suspended load, dissolved load, and bed load.

sediment particle size: the diameter, in millimeters, of sediment. Particle-size classifications are 0.00024-0.004 mm (clay); 0.004-0.062 mm (silt); 0.062-2.0 mm (sand); 2.0-64.0 mm (gravel).

sedimentation: the action or process of forming or depositing sediment.

sensitive to pollution: characteristic of organisms that are easily harmed by low levels of pollutants. They are good indicators of clean water because they cannot survive in polluted water.

sewage: solid and liquid human and animal wastes.

shellfish: an aquatic animal having a shell or shell-like exoskeleton (e.g., mollusk, crustacean).

silt: suspended sediment or bed material with a particle-size of 0.004-0.062 mm in diameter.

siltation: the state of being choked or obstructed with silt.

snapping turtle: a freshwater turtle of the family *Chelydridae*. Snapping turtles have a rough shell and powerful hooked jaws.

soil compaction: a process that occurs as soil is squeezed repeatedly, decreasing the air spaces between soil particles and making the soil very hard.

sow bugs: an aquatic macroinvertebrate; an isopod of the phylum *Arthropoda*, class *Crustacea*; somewhat sensitive to pollution.

spawn: to produce or deposit eggs.

species: a group of organisms that share similar characteristics and can interbreed with one another to produce fertile offspring.

spring peeper: *Hyla Crucifer*. A small brownish tree frog, found in eastern North America, having a shrill high-pitched call.

speed (stream): the rate that water flows.

stewardship: to be responsible for managing property or resources; the individual's responsibility to manage his/her life and property with proper regard for the rights of others.

stonefly: aquatic macroinvertebrate; order *Plecoptera*; nymphs have three pairs of legs, a pair of antennae, and two long tail filaments; typically found on or near stones in the stream; sensitive to pollution.

stream: a body of water flowing in a natural channel and containing water at least part of the year.

striped bass: *Roccus saxatilis*. A food and game fish of North American coastal waters, having dark longitudinal stripes along the sides.

submerged aquatic vegetation (SAV): benthic plants that grow totally under water (e.g., hydrilla, coontail, wild celery, eel grass).

suburban: pertaining to the area or communities surrounding a major city.

suspended load: sediment that contains organic and inorganic particulate matter suspended in and carried by moving water.

suspended sediment: very fine soil particles that remain in suspension in water for a considerable period of time without contact with the bottom, due to the upward components of turbulence and currents.

– T –

Taxa (singular, *taxon*): categories in the biological classification system for all living organisms. Taxa are used to help organize information about the natural world.

tertiary consumer: a carnivore that feeds on other carnivores.

threatened species: a species that is close to being endangered.

tolerance: the ability to endure; resistance to toxic substances or other pollutants.

topsoil: the surface layer of soil, usually rich in humus.

total dissolved solids (TDS): dissolved and suspended solids in water; material left behind after a water sample is filtered and evaporates. Rainwater will have TDS less than 10 ppm; municipal water systems will have TDS less than 500 ppm.

total phosphorus: a test that measures all the forms of phosphorus in a sample.

toxic: a substance that is harmful or, in some cases, poisonous, if ingested or touched. A substance that damages the pristine state of the environment.

transect: a long, narrow sample study area.

trash: dry waste material, such as boxes and cans.

tree of heaven: *Ailanthus altissima*; an exotic invasive plant, originally from China, that grows at the wood's edge.

tributary: a smaller river or stream that flows into a larger river or stream. Usually, a number of smaller tributaries merge to form a river.

turbidity: the amount of solid particles suspended in water that cause light rays shining through the water to scatter. Turbidity is measured in nephelometric turbidity units (NTUs) or Jackson turbidity units (JTUs).

– U –

unbiased: impartial; without prejudice.

urban: pertaining to or constituting a city.

– V –

variable: a condition in a scientific experiment or observation that is subject to change. A variable factor in which change occurs naturally or is made to occur by the investigator is called the independent variable; a variable that changes as a result of change in the independent variable factor is called the dependent variable.

vegetation: plants or plant life, in general. The condition of the vegetation around a stream is a good indication of the health of the aquatic environment.

verge vegetation: vegetation that starts at the top of the stream bank and extends from the bank to the next major vegetation or land use change.

velocity of a stream: the speed and direction of the water flowing in a stream, an important factor in determining what organisms can live in the stream; measured in units such as feet/second or meters/second.

– W –

water column: a section of water extending from the surface of a body of water to its bottom.

water penny: aquatic macroinvertebrate of the family *Psepheridae*; larvae are very flat oval or round shapes and are tan, brown, or black in color; have six small legs and cling to the undersides of rocks; sensitive to pollution.

water quality index (WQI): a method for measuring water quality in rivers. Nine parameters are measured and weighted to develop the index: dissolved oxygen, fecal coliform, pH, biochemical oxygen demand, temperature change, total phosphates, nitrates, turbidity, and total solids.

water snipe: aquatic macroinvertebrate; family *Athericidae*; pale green tapered body with many caterpillar-like legs, conical head, feathery "horns" and back end; somewhat sensitive to pollution.

waterfowl: a swimming bird, usually frequenting freshwater areas.

watershed: a land area that drains water to a particular stream, river, or lake. Its boundary can be identified by locating the highest points of land around the waterway.

weed: a plant considered unattractive, undesirable, or troublesome.

wetland: a lowland habitat, such as a marsh, swamp, or bog that has periodically waterlogged soils or is covered with a shallow layer of water resulting in reduced soil conditions, yet it still permits standing vegetation.

wild celery: *Vallisneria americana*; native SAV; found in freshwater rivers and tributaries of the Chesapeake Bay. It has linear ribbon-like leaves, 1.5 m long and 1 cm wide, emerging from the base of the plant.

– Z –

zooplankton: a diverse group of small protists and animals, such as tiny crustaceans, that serve as food for larger freshwater and marine invertebrates.